

### Claims

What is claimed is:

1. An in situ method of reducing the concentration of a contaminate in soil to or below a target concentration that is deemed environmentally acceptable in an area in which the contaminant concentration in a surface layer of the soil exceeds the target concentration, the method comprising the steps of:

determining a requisite volume of clean soil in vertical proximity to the surface layer such that blending the soil in the surface layer with the requisite volume of clean soil results in a substantially uniform contaminant concentration in the blended soil that is at or below the target;

employing a mobile blending apparatus to vertically mix the surface layer soil in the area with the requisite volume of clean soil in vertical proximity;

running the mobile blending apparatus through the area under conditions to provide sufficient time for the mobile blending apparatus to blend the mixed soils so that the contaminate concentration throughout the blended soil is substantially uniform.

2. The method of claim 1, wherein at least a portion of the requisite volume of clean soil is clean soil placed on top of the surface layer.

3. The method of claim 2, wherein the clean soil placed on top of the surface layer is introduced from an offsite source.

4. The method of claim 1, wherein the mobile blending apparatus excavates at least some of the soil to create an excavated soil, and mixes and blends the excavated soil so that the contaminate concentration throughout the blended soil is substantially uniform.

5. The method of claim 4, wherein the mobile blending apparatus is used to backfill the blended excavated soil.

-11-

6. The method of claim 1, wherein the step of running the mobile blending apparatus through the area is accomplished by moving to a first location in the area, running the mobile blending apparatus in that location for sufficient time for the mobile blending apparatus to blend the mixed soils to a substantially uniform contaminate concentration in the location and then moving the mobile blending apparatus to another location in the contaminated area and repeating the steps.

7. The method of claim 1, wherein the step of running the mobile blending apparatus through the area is accomplished by moving the mobile blending apparatus through the area at a ground speed sufficiently slow to provide sufficient time for the mobile blending apparatus to blend the mixed soils to a substantially uniform contaminate concentration.

8. The method of claim 1, wherein the contaminate is a pesticide.

9. The method of claim 6, wherein the contaminate is a pesticide.

10. The method of claim 7, wherein the contaminate is a pesticide.

11. An in situ method of reducing the concentration of a contaminate in soil to or below a target concentration that is deemed environmentally acceptable in an area in which the contaminant concentration in a surface layer of the soil exceeds the target concentration, the method comprising the steps of:

mapping the area at the surface;

determining the depth of the surface layer and the average concentration of contaminant in the surface layer;

determining that there is a sufficient volume of clean soil in the area in vertical proximity to the surface layer such that blending the soil in the surface layer with the sufficient volume of clean soil results in a substantially uniform contaminant concentration at or below the target in the blended soil;

-12-

employing a mobile trencher apparatus modified to lift and churn soil in place to vertically mix the surface layer soil in the area with the sufficient volume of clean soil in vertical proximity;

running the trencher through the area under conditions to provide sufficient time for the trencher to blend the mixed soils, such that the mixed soils comprise a substantially uniform contaminate concentration.

12. An in situ method of reducing the concentration of a contaminate in soil to or below a target concentration that is deemed environmentally acceptable at a site which includes "hot spot" areas in which the contaminant concentration in a surface layer of the soil exceeds the target concentration, the method comprising the steps of:

determining and marking the location of hot spots areas;

determining that there is a sufficient volume of clean soil in vertical proximity to the surface layer such that blending the soil in the surface layer with the sufficient volume of clean soil results in a substantially uniform contaminant concentration at or below the target in the blended soil;

employing a mobile blending apparatus to vertically mix the surface layer soil at a first location within the area with the sufficient volume of clean soil in vertical proximity with the contaminated soil;

continuing to run the apparatus in the first location for a time sufficient to blend the mixed soils to a substantially uniform contaminate concentration;

moving the apparatus to another location in the contaminated area and repeating the steps of mixing and blending; and

continuing the steps over the contaminated area.

-13-

13. A method of reducing concentrations of a toxic material in soil, the method comprising the steps of:

using a mobile blending apparatus to mix in place a first vertical profile of the soil to a depth of at least three feet below ground surface, the first vertical profile comprising clean soil and soil with concentrations of the toxic material;

using the mobile blending apparatus to blend the first vertical profile in place to a substantially uniform concentration of the toxic material; and

advancing the mobile blending apparatus to a second vertical profile and repeating the steps of mixing and blending.

14. The method of claim 13 wherein the mobile blending apparatus comprises a modified trencher device.

15. The method of claim 14 wherein the mobile blending apparatus comprises a large volume modified trencher device.